




Key SmartSite® Success Features






- Programmatic approach provides logical framework for complex analysis
- Systems engineering analysis evaluates interrelated cost and performance factors
- Integration of emerging and proven technologies yields high value at low cost
- Use of modern IT tools to integrate operations, maintenance, and monitoring data improves and simplifies management
- Fully documented, performance based results support continued improvements

Primary Goals – Typical Results


- An integrated, more easily managed program.
- Empowered operators and managers.
- Improved communications and documentation.
- Improved systems performance and reliability.
- 20% - 40 % cost savings from labor, utilities, materials, analytical, etc.
- 2 - 3 yr. payback on optimization investments.
- Accelerated closure.






SmartSite® Approach


- **Program Elements Approach:**
 - ✓ Treatment approach
 - ✓ Mechanical system components
 - ✓ Operations and maintenance
 - ✓ Environmental and treatment system monitoring
 - ✓ Administrative and regulatory
- **Systems Engineering Approach to Analysis:**
 - ✓ Interdisciplinary team approach
 - ✓ Evaluates all aspects of the program
 - ✓ Analysis of interrelated problems and solutions



Olivetti Office - Optimization of *all elements* of this complex groundwater and soil remediation program resulted in annual cost savings of approximately \$110K, and reduced time to closure by up to 5 years.



O-FIELD Landfill - Systems approach to analysis of performance and costs of packed tower supported elimination of the tower and associated GAC, O&M, and monitoring, yielding annual savings of \$55K.





SmartSite® Approach (cont.)

- **Formal, Documented Approach:**
 - ✓ Structured program review process
 - ✓ SmartSite® Optimization Manual
 - ✓ Data collection modules
 - ✓ Formal QA/QC program
 - ✓ Standardized reporting
- **Performance-Based Metrics:**
 - ✓ Mass removal efficiency
 - ✓ Program direct and indirect costs
 - ✓ Regulatory/QA/QC compliance
 - ✓ Environmental/Human exposures

Industry's only formal documented systems engineering approach to optimization



Loring Air Force Base - Optimization results and recommendations used in CERCLA five-year review documents.



SITE Program - Achieving *performance-based metrics* including >95 % mass removal efficiency and assuring no off-site impacts was critical to optimizing this *innovative co-metabolic bioremediation* program.



